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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,311	12/12/2003	William Andrew Hennessy	133458	2242

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EXAMINER

WATSON, KRISTIE D

ART UNIT PAPER NUMBER

2878

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/735,311	HENNESSY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kristie Watson	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/03</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claim 1-7, 9-12, 14, 16-19, 22, 24-27, and 29 are rejected under 35 U.S.C. 102

a) as being anticipated by Sato et al. U. S. Patent Number 6,573, 506 B2.

3. Pertaining to claim 1, **Sato et al.** (Column 1, Lines 55-62 and Column 4, Lines 30-35) discloses that a radiation detector assembly (Figure 1) comprising: a detector substrate;

a detector matrix array disposed on said detector substrate;

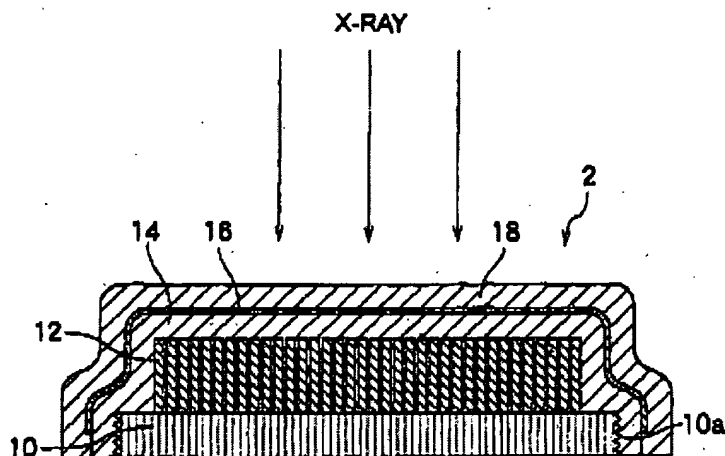
a scintillator material (12) disposed on said detector matrix array;

a moisture resistant layer disposed on said scintillator material (12), said moisture resistant layer comprising a plurality of sub-layers, a protective cover (10a) disposed over said detector substrate and said moisture resistant layer (16);

and an adhesive material disposed between said detector substrate and said cover;

wherein said adhesive material is disposed so that it is not in contact with said moisture resistant layer. **See Figure 1 Sato et al.**

**Fig.1**



4. Pertaining to claim 2, **Sato et al.** (Column 2 Lines 63-65) discloses that a detector assembly in accordance with Claim 1, wherein said moisture resistant layer further comprises an encapsulating coating disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating.

5. Pertaining to claim 3, **Sato et al.** (Column 4, Lines 30-40 and 45-47) discloses that a detector assembly in accordance with Claim 2, wherein said moisture resistant layer further comprising one or more; moisture resistant sub-layers disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to a radiation to be detected by said detector assembly.

6. Pertaining to claim 4, **Sato et al.** (Column 5, Lines 65-67 and Column 6, Lines 1-5) discloses that a detector assembly in accordance with Claim 3, wherein said plurality

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of sub-layers are selected from a group consisting of titanium, aluminum, nickel, a polymer comprising one or more types of substituted or unsubstituted para-xylylene materials, magnesium fluoride ( $\text{MgF}_2$ ), silicon oxide ( $\text{SiO}$ ), aluminum fluoride ( $\text{AlF}_3$ ), silicon dioxide ( $\text{SiO}_2$ ), titanium dioxide ( $\text{TiO}_2$ ), a silicone potting compound and combinations thereof.

7. Pertaining to claim 5, **Sato et al.** (Column 5, Lines 65-67 and Column 6, Lines 1-5) discloses that a detector assembly in accordance with Claim 2, wherein said encapsulating coating comprises a material selected from a group consisting of magnesium fluoride ( $\text{MgF}_2$ ), silicon oxide ( $\text{SiO}$ ), aluminum fluoride ( $\text{AlF}_3$ ), titanium dioxide ( $\text{TiO}_2$ ), silicon dioxide ( $\text{SiO}_2$ ), a polymer comprising one or more layers of substituted or unsubstituted para-xylylene materials, and combinations thereof.

8. Pertaining to claim 6, **Sato et al.** (Column 5, Lines 12-15) in view of **Kingsley et al.** (Column 4, Lines 10-31) discloses that a detector assembly in accordance with Claim 2, wherein said reflective layer is selected from a group consisting of silver, gold, aluminum, a polyester film with a layer of pressure sensitive adhesive, and combinations thereof.

9. Pertaining to claim 7, **Sato et al.** (Column 5, Lines 40-45) discloses that a detector assembly in accordance with Claim 1 wherein said protective cover comprises graphite.

10. Pertaining to claim 9, **Sato et al.** (Column 2, Lines 1-7, and Column 1 Lines 55-66) discloses that an X-ray detector assembly comprising: a detector substrate;  
a detector matrix array disposed on said detector substrate;  
an X-ray scintillator material disposed on said detector matrix array;  
a moisture resistant layer disposed on said scintillator material (12), said moisture resistant layer comprising a plurality of sub-layers, a protective cover (10a) disposed over said detector substrate and said moisture resistant layer;  
and an adhesive material disposed between said detector substrate and said cover;  
wherein said adhesive material is disposed so that it is not in contact with said moisture resistant layer(16).

11. Pertaining to claim 10, **Sato et al.** (Column 5, Lines 1-10 and Column 8, Lines 11-15) discloses that an X-ray detector assembly in accordance with Claim 9 wherein said moisture resistant layer further comprises an encapsulating coating layer disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating layer.

12. Pertaining to claim 11, **Sato et al.** (Column 3, Lines 42-65 and Column 4 Lines 30-40) discloses that an X-ray detector assembly in accordance with Claim 10 said moisture resistant layer further comprising one or more moisture resistant sub-layers

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disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to X-rays.

13. Pertaining to claim 12, **Sato et al.** (Column 5, Lines 40-45) discloses that an X-ray detector assembly in accordance with Claim 9 wherein said protective cover comprises graphite.

14. Pertaining to claim 14, **Sato et al.** (Column 6, Lines 1-5) discloses that an X-ray detector assembly in accordance with Claim 9 wherein said X-ray scintillator is selected from the list consisting of cesium iodide (CsI), CsI (TI), CsI (Na), NaI (TI), LiI (Eu), and combinations thereof.

15. Pertaining to claim 16, **Sato et al.** (Column 6, Lines 20-40) discloses that a radiation detector assembly comprising: a detector substrate;  
a detector matrix array disposed on said detector substrate;  
a contact finger area disposed on said detector substrate and in electrical communication (80) with said detector matrix array (20);  
a scintillator material (12) disposed on said detector matrix array (20);  
a moisture resistant layer disposed on said scintillator material, said moisture resistant layer comprising a plurality of sub-layers; and a protective cover (10a) disposed over said detector substrate and said moisture resistant layer (16);

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wherein said protective cover is bonded to said moisture resistant layer using an adhesive material; and wherein said moisture resistant layer is disposed so that an edge portion of said moisture resistant layer is bonded to said detector substrate between said adhesive material and said contact finger area. **See Figure 1, Sato et al.**

16. Pertaining to claim 17, **Sato et al.** (Column 5, Lines 5-10) discloses that a radiation detector assembly in accordance with Claim 16, wherein said moisture resistant layer further comprises an encapsulating coating layer disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating layer.

17. Pertaining to claim 18, **Sato et al.** (Column 6, Lines 1-5) discloses that a radiation detector assembly in accordance with Claim 17, wherein said plurality of sub-layers are selected from a group consisting of titanium, aluminum, nickel, a polymer comprising one or more types of substituted or unsubstituted paraxylylene materials, magnesium fluoride ( $\text{MgF}_2$ ), silicon oxide ( $\text{SiO}$ ), aluminum fluoride ( $\text{AlF}_3$ ), silicon dioxide ( $\text{SiO}_2$ ), titanium dioxide ( $\text{TiO}_2$ ), a silicone potting compound, and combinations thereof.

18. Pertaining to claim 19, **Sato et al.** (Column 1, Lines 55-60 and Column 2, Lines 63-65, Column 4, Lines 30-35) discloses that a radiation detector assembly in accordance with Claim 17, wherein said moisture resistant layer further comprises one



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or more moisture resistant sub-layers disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to X-rays.

19. Pertaining to claim 22, **Sato et al.** (Column 5, Lines 40-45) discloses that a detector assembly in accordance with Claim 16 wherein said protective cover comprises graphite.

20. Pertaining to claim 24, **Sato et al.** (Column 1, Lines 55-66, Column 2, Lines 1-7, and Column 4, Lines 30-35) discloses that an X-ray detector assembly comprising: a detector substrate;

a detector matrix array disposed on said detector substrate;

a contact finger area disposed on said detector substrate and in electrical communication (80) with said detector matrix array (20) ;

an X-ray scintillator material disposed on said detector matrix array (20);

a moisture resistant layer disposed on said scintillator material, said moisture resistant layer comprising a plurality of sub-layers;

and a protective cover disposed over said detector substrate and said moisture resistant layer (16);

wherein said protective cover is bonded to said moisture resistant layer using an adhesive material ;

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and wherein said moisture resistant layer is disposed so that an edge portion of said moisture resistant layer is bonded to said detector substrate between said adhesive material and said contact finger area. See **Figure 1 Sato et al.**

21. Pertaining to claim 25, **Sato et al.** (Column 2 Lines 63-65) discloses that an X-ray detector assembly in accordance with Claim 24 wherein said moisture resistant layer further comprises an encapsulating coating layer disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating layer.

22. Pertaining to claim 26, **Sato et al.** (Column 3, Lines 42-65 and Column 4 Lines 30-40) discloses that an X-ray detector assembly in accordance with Claim 25 said moisture resistant layer further comprising one or more moisture resistant sub-layers disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to X-rays.

23. Pertaining to claim 27, **Sato et al.** (Column 7, Lines 50-55) discloses that an X-ray detector assembly in accordance with Claim 24 wherein said protective cover comprises graphite.

24. Pertaining to claim 29, **Sato et al.** (Column 6, Lines 1-5) discloses that an X-ray detector assembly in accordance with Claim 24 wherein said X-ray scintillator material is selected from the list consisting of cesium iodide (CsI) CSI(Tl), CsI(Na), NaI(Tl), Lil(I:u), and combinations thereof.

***Claim Rejections - 35 USC § 103***

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. Claims 8, 13, 23, and 28 are rejected under 35 U.S.C. 103(a) as being obvious over Sato et al. U. S. Patent Number 6,573, 506 B2 in view of Suzuki et al. U.S. Publication Number 2005/0156113 A1.

27. Pertaining to claim 8, **Suzuki et al.** (033) discloses that a detector assembly in accordance with Claim 1, wherein said protective cover comprises plastic.

28. Pertaining to claim 13, **Suzuki et al.** (0033) discloses that an X-ray detector assembly in accordance with Claim 9 wherein said protective cover comprises plastic.

29. Pertaining to claim 23, **Suzuki et al.** (0033) discloses that a detector assembly in accordance with Claim 16 wherein said protective cover comprises plastic.

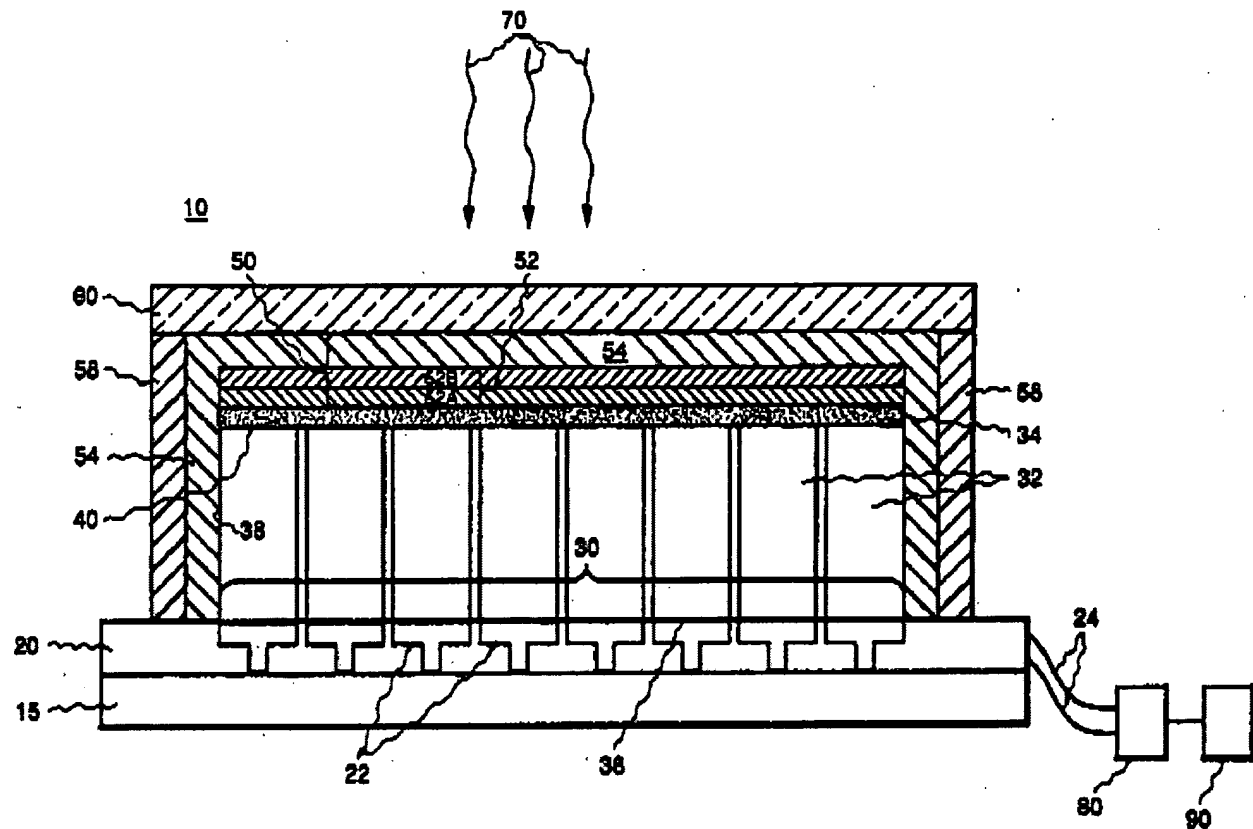
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30. Pertaining to claim 28, **Suzuki et al.** (0033) discloses that an X-ray detector assembly in accordance with Claim 24 wherein said protective cover comprises plastic.

31. Claims 15, 20, 21, and 30 are rejected under 35 U.S.C. 103(a) as being obvious over Sato et al. U. S. Patent Number 6,573, 506 B2 in view of Kingsley et al. U.S Patent Number 5,179, 284.

32. **Sato et al.** discloses the limitations as claimed except he does not teach that the protective covering is made of plastic and that the scintillator is comprised of cesium iodide needles. However, **Kingsley et al.** does teach that the scintillator is comprised of cesium iodide needles. **Suzuki et al.** teaches the concept of the protective covering made of plastic. Therefore it would have been obvious to one that is skilled in the art to combine the limitations of the scintillator as claimed by **Sato et al.** with **Kingsley et al.**'s cesium iodide needles in order to design a scintillator that maximizes its imaging efficiency by preventing the build-up of the moisture on the scintillator material. It also would have been obvious to combine Sato et al. and Kingsley et al. inventions with Suzuki et al.'s protective covering made of plastic to ensure the durability of the construction of the radiation detector assembly.

**See FIGS. 3-12**, where Sato et al. teaches the claimed limitations. See **Kingsley et al. Figure 1**.



33. Pertaining to claim 15, **Kingsley et al.** (Column 1, Lines 31-46) discloses that an X-ray detector assembly in accordance with Claim 9 wherein said X-ray scintillator comprises cesium iodide (CsI) needles.

34. Pertaining to claim 20, **Sato et al.** (Column 6, Lines 1-5) in view of **Kingsley et al.** (Column 4, Lines 10-31) discloses that a radiation detector assembly in accordance with Claim 17, wherein said encapsulating coating layer is selected from a group consisting of magnesium fluoride ( $\text{MgF}_2$ ), silicon oxide aluminum fluoride ( $\text{AlF}_3$ ), Titanium dioxide ( $\text{TiO}_2$ ), silicon dioxide ( $\text{SiO}_2$ ), a polymer comprising one or more tiers of substituted or unsubstituted para-xylylene materials, and combinations thereof.

35. Pertaining to claim 21, **Sato et al.** (Column 5, Line 12-15) in view of **Kingsley et al.** (Column 4, Lines 10-31) discloses that a radiation detector assembly as in claim 17, wherein said reflective layer is selected from a group consisting of silver, gold, aluminum, a polyester film with a layer of pressure sensitive adhesive, and combinations thereof.

36. Pertaining to claim 30, **Kingsley et al.** (Column 1, Lines 31-46) discloses that an X-ray detector assembly in accordance with Claim 24 wherein said X-ray scintillator material comprises cesium iodide (CsI) needles.

### ***Conclusion***


37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristie Watson whose telephone number is (571) 272-5052. The examiner can normally be reached on 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272- 2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kristie Watson  
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